



## HARVEST BIOENERGY FROM

# THE LAND OF FORESTS

### BUSINESS OPPORTUNITIES IN FINLAND

Take your bioenergy competence to the next level. Global leaders in technology and first-rate R&D make Finland an excellent location for bioenergy investments.

#### MEGA TRENDS ARE KEY DRIVERS

As the world's population continues to grow, we will need 45% more energy, 50% more food and 30% more water by 2030. These trends – combined with concerns about energy security, climate change and urbanization – are the drivers behind the rising demand for bioenergy. Today, biomass represents around 14% of global energy consumption. That figure is expected to rise to over 20% by 2030.

Finland has become a global leader in the utilization of wood-based biomass for energy production, thanks to its exceptionally strong forest sector and extensive investments in bioenergy R&D&I since the 1980s. Finnish companies are experts in holistic bioenergy solutions that span the entire value chain, and can meet the demanding requirements for feedstock and mixed biofuels.

#### ULTIMATE HIGH TECH TO MAXIMIZE FEEDSTOCK VALUE

Today, the Finnish bioenergy sector encompasses the whole value chain from forest management and feedstock harvesting to bioenergy supplies. More than 300 companies and organizations employ over 20,000 people in Finland. Leading combustion and CHP technology companies include global players **Andritz, AMEC Foster Wheeler, Outotec, RENEWA, Valmet** and **Vapor Boilers**. The leading companies in the feedstock harvesting and processing chain include **BMH Technology, John Deere, Kesla, LMH Hakkuri, MHG Systems, Raumaster, Ponsse** and **Saalasti**.

Companies such as **Gaia, Indufor** and **Pöyry** offer world-class expertise and consulting services for forest management and utilization, waste management and bioenergy production. **VTT Technical Research Centre of Finland** is one of the world's leading

applied research institutes in this field, with a strong command of bioeconomics. **The European Forest Institute** has its headquarters in Finland, adding another layer of expertise. **CLIC**, an open innovation cluster with 30 companies and 17 institutions, coordinates cleantech and bioeconomy portfolios to create system solutions and offers resources that are often out of the reach of smaller enterprises.

**BIOENERGY**  
REPRESENTS ABOUT  
**80%**  
OF THE RENEWABLES  
PRODUCED IN  
FINLAND.

## AT THE FOREFRONT OF SUSTAINABLE BIOENERGY

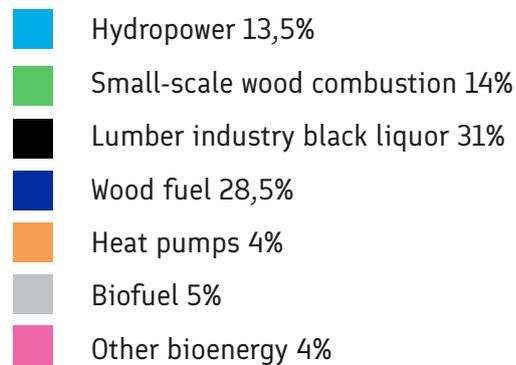
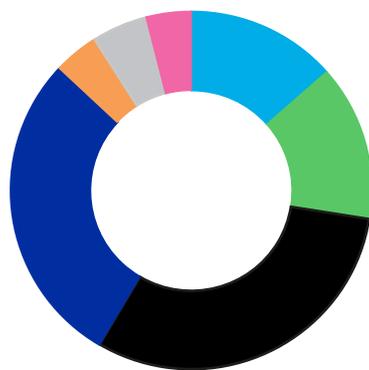
The use of transport biofuels is rapidly increasing in Finland. The development is led by major forest and energy companies, such as **UPM, Neste Oil** and **St1**. The biofuel infrastructure is supported by medium-sized companies and startups that focus on new, innovative technologies and solutions.

By 2030, the share of emission-free, renewable energy will rise to 50%, and renewable traffic fuels is targeted to reach 40%. A major share of future growth is expected to come from additional production of bioenergy.

# FINLAND'S AMBITIOUS 38%

EU RENEWABLES TARGET OF FINAL ENERGY CONSUMPTION BY 2020 WAS REACHED ALREADY IN 2014.

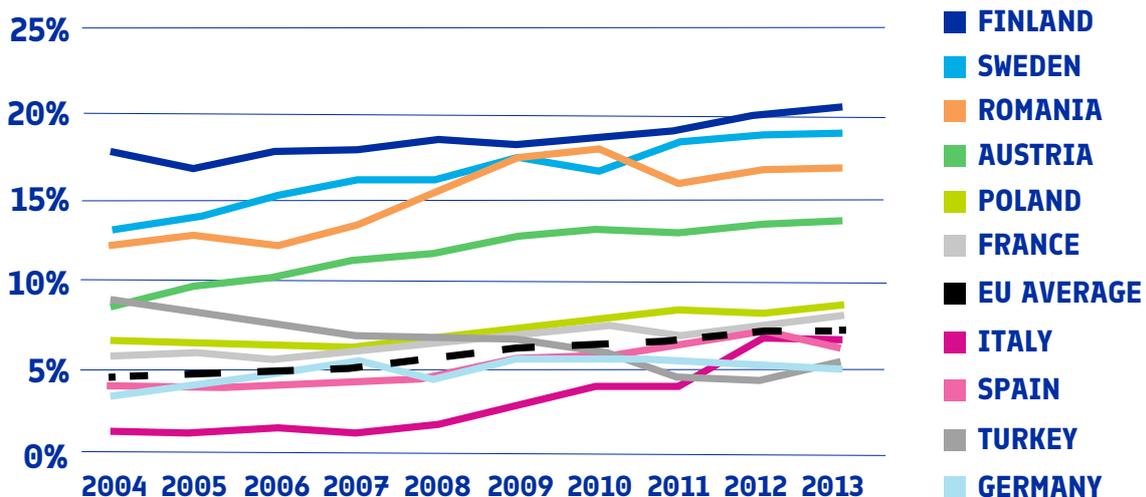
## RENEWABLE ENERGY SOURCES IN FINLAND IN 2015



Source: Statistics Finland

## TOP 10 EU BIOENERGY PRODUCERS BY VOLUME

### BIOENERGY SHARE OF FINAL ENERGY CONSUMPTION



Source: Eurostat (2014)